

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the present application.

LISTING OF CLAIMS:

1-24. (Canceled).

25. (Previously Presented - **Allowed**) *Saccharomyces cerevisiae* strains selected from the group consisting of H1791 (VTT C-98298, DSM 12213), H1795 (VTT C-98300, DSM 12214), H1803 (VTT C-98302, DSM 12215), H2193 (VTT C-99317, DSM 12722), H2195 (VTT C-99320, DSM 12723) and H2222 (VTT C-99322, DSM 12724).

26. (Previously Presented - **Allowed**) *Schizosaccharomyces pombe* strains selected from the group consisting of H2369 (VTT C-99323, DSM 12725) and H2370 (VTT C-99324, DSM 12726).

27-42. (Canceled).

43. (Currently Amended) A method for increasing yield of a product produced during a microbial ~~from a~~ production process comprising the steps of:

~~wherein said product is produced in a microorganism wherein the production process normally results in either or both of (1) a depletion in the amount of either or both of NAD and NADPH cofactors and (2) an increase in the amount of either or both of NADH and NADP cofactors,~~

~~wherein said method comprises culturing~~ (a) transforming a host microorganism selected from the group consisting of yeast and *Corynebacteria* transformed with one or more polynucleotides encoding that encode an enzyme to produce a transformed microorganism,

~~wherein said enzyme is oxidizes one or more of NADH and NADPH molecules or said enzyme reduces one or more of NAD and NADP molecules thereby obtaining an increase in the yield of said product compared to the yield of the process using the untransformed microorganism and~~

~~wherein said one or more polynucleotides comprise a polynucleotide that encodes an enzyme selected from the group consisting of glutamate dehydrogenase, malic enzyme, aldehyde dehydrogenase, malate dehydrogenase, glycerol-3-phosphate dehydrogenase, xylose-1-dehydrogenase, glyceraldehyde-3-phosphate dehydrogenase, orotate reductase, and ferredoxin reductase, and~~

(b) culturing the transformed microorganism to produce a product ~~and wherein said product is selected from the group~~

consisting of ethanol, xylitol, lysine, alanine, cysteine, aspartate, asparagine, glycine, isoleucine, leucine, methionine, proline, arginine, serine, threonine, valine, tryptophan and polyhydroxybutyrate,

thereby increasing the yield of said product when compared to the yield of said product when produced in a microorganism that has not been transformed according to step (a).

44. (Canceled).

45. (Currently Amended) The method of claim 43, wherein the product is produced in an amount that is at least 5 % higher than the amount produced in ~~the process using a corresponding untransformed~~ a microorganism that has not been transformed according to step (a) ~~under the same conditions.~~

46. (Previously presented) The method of claim 43 wherein the product is produced from carbohydrate.

47-48. (Canceled).

49. (Previously presented) The method of claim 43, wherein the microorganism is a yeast cell.

50-56. (Canceled).

57. (Currently Amended) A method for increasing the yield of a product produced in a microbial production process or the specific rate of production of a product or both, comprising the steps of: ~~in a production process wherein said product is produced by a microorganism wherein the production process normally results in either or both of a depletion in the amount of either or both of NAD NADPH cofactors and an increase in the amount of either or both of NADH and NADP cofactors, wherein said method comprises culturing~~

(a) transforming a host microorganism selected from the group consisting of yeast and *Corynebacteria* transformed with one or more nucleic acids encoding to encode one or more enzymes to produce a transformed microorganism,

wherein said one or more enzymes ~~that~~ catalyze one or more steps in one of the following cyclic series of reactions cycle 1 or cycle 2:

cycle 1:

Enzyme 1: $\text{NADH} + \text{S} \leftrightarrow \text{SH}_2 + \text{NAD}$

Enzyme 2: $\text{NADP} + \text{SH}_2 \leftrightarrow \text{S} + \text{NADPH}$

wherein S and SH₂ are, respectively, the oxidized and reduced substrates of Enzyme 1 and Enzyme 2, which are both dehydrogenases,

wherein the dehydrogenases are selected from the group consisting of malic enzyme, glutamate dehydrogenase, aldehyde dehydrogenase, alcohol dehydrogenase, malate dehydrogenase, glycerol-3-phosphate dehydrogenase, xylose-1-dehydrogenase, glyceraldehyde-3-phosphate dehydrogenase, orotate reductase, and ferredoxin reductase;

or cycle 2:

Enzyme 3: $\text{NADH} + \text{S} \leftrightarrow \text{SH}_2 + \text{NAD}$

Enzyme 4: $\text{SH}_2 + \text{X} \leftrightarrow \text{Y} + \text{ZH}_2$

Enzyme 5: $\text{NADP} + \text{ZH}_2 \leftrightarrow \text{S} + \text{NADPH}$

wherein S and SH_2 are, respectively, the oxidized and reduced substrates of Enzyme 3, which is a dehydrogenase; SH_2 , X, Y and ZH_2 are substrates of Enzyme 4, which is not a dehydrogenase; and ZH_2 and S are, respectively, reduced and oxidized substrates of Enzyme 5, which is a dehydrogenase, and

(b) culturing the transformed microorganism to produce a product selected from the group consisting of ethanol, xylitol, lysine, alanine, cysteine, aspartate, asparagine, glycine, isoleucine, leucine, methionine, proline, arginine, serine, threonine, valine, tryptophan and polyhydroxybutyrate,

thereby increasing the yield of said product when compared to the yield of said product when produced in a microorganism that has not been transformed according to step (a).

58-59. (Canceled).

60. (Previously Presented) The method according to claim 57, wherein the product is ethanol.

61. (Previously Presented) The method according to claim 43, wherein the product is ethanol.

62-66. (Canceled).

67. (Previously Presented) The method of claim 57, wherein the microorganism is a yeast.

68. (Previously Presented) The method of claim 57, wherein the product is produced from carbohydrate.